Table 5: **RT**

HXB2 Location	Author Location	Sequence	Immunogen	Species(HLA)	References
RT(36–52)	RT(36–52 BRU)	EICTEMEKEGKISKIGP	HIV-1 infection	human( )	[DeGroot1991a]
	• 9 out of 17 humans can make strong IL-2 responses to this epitope				
RT(38–52)	RT(38–52 BRU)	CTEMEKEGKISKIGP	Vaccine	murine(H-2^k)	[DeGroot1991a]
	Vaccine: *Vector/type:* recombinant protein *Strain:* BRU *HIV component:* RT				
	• T-cells from RT immunized mice have enhanced proliferative response with peptide				
RT(39–53)	RT(194–208)	TEMEKEGKISKIGPE	*in vitro* stimulation	human( )	[Manca1995c]
	• Protein priming induced T-cells that recognize peptide, 4 clones from a single donor recognized this peptide				
RT(48–62)	RT(48–62 BRU)	SKIGPENPYNTPVFA	Vaccine	murine(H-2^k)	[DeGroot1991a]
	Vaccine: *Vector/type:* recombinant protein *Strain:* BRU *HIV component:* RT				
	• T-cells from RT immunized mice have enhanced proliferative response with peptide				
RT(62–77)	RT(62–77 BRU)	AIKKKDSTKWRKLVDF	Vaccine	murine(H-2^k)	[DeGroot1991a]
	Vaccine: *Vector/type:* recombinant protein *Strain:* BRU *HIV component:* RT				
	• T-cells from RT immunized mice have enhanced proliferative response with peptide				
RT(88–102)	RT(88–102 BRU)	WEVQLGIPHPAGLKK	Vaccine	murine(H-2^{t4})	[DeGroot1991a]
	Vaccine: *Vector/type:* recombinant protein *Strain:* BRU *HIV component:* RT				
	• T-cells from RT immunized mice have enhanced proliferative response with peptide				
RT(124–138)	Pol(303–317)	FRKYTAFTIPSINNE	HIV-1 infection	human(DR supermotif)	[Wilson2001]
	• Epitope name: Pol 303. Eleven peptides were identified that had the HLA-DR supermotif, all were found to bind to MHC class II DR molecules and all elicited proliferative responses from multiple HIV-infected donors				
	• This epitope binds seven HLA-DR alleles: DRB1*0901, DRB1*0802, DRB1*0701, DRB1*0405, DRB1*0401, DRB1*1501 and DRB1*0101, with an IC50 threshold below 1,000 nM				
	• This epitope sequence is conserved in 68% of clade B isolates				
	• 8/22 HIV infected individuals responded to this epitope (13/22 responded to some of the DR supermotif epitopes, the 9 non-responder peptides tended to also not have recall responses to rec HIV-1 whole proteins)				
RT(133–147)	RT(133–147 BRU)	PSINNETPGIRYQYN	Vaccine	murine(H-$2^{k,i5}$)	[DeGroot1991a]
	Vaccine: *Vector/type:* recombinant protein *Strain:* BRU *HIV component:* RT				
	• T-cells from RT immunized mice have enhanced proliferative response with peptide				

RT(144–158)	RT(144–158 BRU)	YQYNVLPQGWKGSPA	Vaccine	murine(H-2^{t4})	[DeGroot1991a]

Vaccine: *Vector/type:* recombinant protein *Strain:* BRU *HIV component:* RT

- T-cells from RT immunized mice have enhanced proliferative response with peptide

RT(156–170)	Pol(335–349)	SPAIFQSSMTKILEP	HIV-1 infection	human(DR supermotif)	[Wilson2001]

- Epitope name: Pol 596. Eleven peptides were identified that had the HLA-DR supermotif, all were found to bind to MHC class II DR molecules and all elicited proliferative responses from multiple HIV-infected donors
- This epitope binds nine HLA-DR alleles: DRB1*0101, DRB1*1501, DRB1*0405, DRB1*1101, DRB1*1302, DRB1*0701, DRB1*0901, DRB5*0101 and DRB3*0101, with an IC50 threshold below 1,000 nM
- This epitope sequence is conserved in 79% of clade B isolates
- 7/22 HIV infected individuals responded to this epitope (13/22 responded to some of the DR supermotif epitopes, the 9 non-responder peptides tended to also not have recall responses to rec HIV-1 whole proteins)

RT(171–190)	RT(171–190 HXB2)	FRKQNPDIVIYQYMD-DLYVG	HIV-1 infection	human(DR1, 2 or 3, 4 and 7)	[vanderBurg1999]

- T-cells specific for this epitope from the three donors were stimulated when presented with target cells pulsed with whole RT, indicating that the peptide is naturally processed for multiple HLA-DR molecules
- Epitope binds to HLA-DR1, -DR2, -DR3, -DR4, and DR7, and can elicit Th1 cells that recognize peptide, protein, and HIV pulsed stimulator cells in the context of DR1, 2 or 3, 4 and 7 – these HLA types cover more than half of the general population

RT(195–209)	RT( )	IGQHRTKIEELRQHL	*in vitro* stimulation	human( )	[Manca1995b]

- Protein priming induced T-cells that recognize peptide

RT(196–215)	RT(351–370)	GQHRTKIEELRQHLLR-WGLT	*in vitro* stimulation	human( )	[Manca1995c]

- Protein priming induced T-cells that recognize peptide, 4 clones from a single donor recognized this peptide

RT(249–263)	RT( )	KDSWTWNDIQKLVGK	*in vitro* stimulation	human( )	[Manca1995b]

- Peptide stimulation of PBMC from non-infected individuals *in vitro*
- Peptide priming did not induce T-cells that recognize whole protein

RT(249–263)	RT(248–262)	KDSWTVNDIQKLVGK	*in vitro* stimulation	human( )	[DeBerardinis1999]

- PBMC from donors GD (HLA DR 11; DRB52) and LD (HLA DR 11, 13; DRB52) recognized this epitope (pep23)
- A subset of T-cell lines generated from these donors were capable of recognizing pep23 expressed on the surface of filamentous phage fd, fused to the major coat protein gVIIIp
- This peptide was selected to study phage presentation of peptide sequences because it was known to serve as a T-cell helper determinant which could induce proliferation from a naive repertoire [Manca1995a]

RT(249–263)	RT(249–263)	KDSWTVNDIQKLVGK	Vaccine, *in vitro* stimulation	human(DR5)	[DeBerardinis2000]

Vaccine: *Vector/type:* HIV-1 peptide in filamentous bacteriophage major coat protein *HIV component:* RT peptides

- Epitope name: RT2. Phage display of the CTL epitope, ILKEPVHGV coupled with T-helper epitope KDSWTVNDIQKLVGK, elicited specific CTL responses in PBMC from HIV negative individuals and *in vivo* in immunization of HLA-A2 transgenic mice
- Bacteriophage presentation of peptides is generally used for stimulation of antibodies, and this novel discovery of CTL epitope processing and presentation suggests new possibilities for these vectors
- HIV-1 peptides were displayed in filamentous bacteriophage fd virion major coat protein pVIII

RT(249–263)	RT(248–262 HXB2)	KDSSTVNDIQKLVGK	*in vitro* stimulation	human(DRS)	[Fenoglio1999]

- RT pep23 epitope exhibited antagonistic activity against proliferation of gp120-specific T-cells when flanked by unrelated amino acid sequence
- The glutathione S-transferase (GST)-peptide system can be used to display peptides; antigenicity was maintained when this peptide was expressed at the C-term end, but antagonism resulted when this peptide was expressed at the N-term end

---

RT(251–261)	RT(250–260)	SSTVNDIQKLV	*in vitro* stimulation	human(DR5(11.01))	[Manca1996]

- This peptide was the minimal stimulatory sequence
- One Th line was stimulated by p66, one by a Glutathione-S-transferase (GST)-peptide fusion protein
- Constructs linking GST to the KDSSTVNDIQKLVGK peptide at the N-term end of GST stimulated Th cells, but not constructs linking at the C-term end
- The C and N termini of GST are not intrinsically permissive or non-permissive, presentation is epitope specific (see FAILKCNNK for contrast)

RT(258–272)	RT( )	QKLWGKLNWASQIYP	*in vitro* stimulation	human( )	[Manca1995b]

- Peptide stimulation of PBMC from non-infected individuals *in vitro*
- Peptide priming did not induce T-cells that recognize whole protein

---

RT(271–290)	RT(271–290 HXB2)	YPGIKVRQLCKLLRGT-KALT	HIV-1 infection	human( )	[vanderBurg1999]

- Epitope can bind to at least 5 different HLA-DR molecules, and peptide on target cells can elicit Th responses from PBMC cultures from healthy donors, however it does not seem to be processed properly from whole RT or virus

---

RT(276–290)	RT( )	WRQLCKLLRGTKALT	*in vitro* stimulation	human( )	[Manca1995b]

- Protein priming induced T-cells that recognize peptide

RT(285–299)	RT( )	GTKALTEVIPLTEEA	*in vitro* stimulation	human( )	[Manca1995b]

- Protein priming induced T-cells that recognize peptide

RT(294–308)	RT( )	PLTEEAELELAENRE	*in vitro* stimulation	human( )	[Manca1995b]

- Protein priming induced T-cells that recognize peptide

RT(303–317)	RT( )	LAENREILKEPVHGV	*in vitro* stimulation	human( )	[Manca1995b]

- Protein priming induced T-cells that recognize peptide

RT(384–398)	RT( )	GKTPKFKLPIQKETW	*in vitro* stimulation	human( )	[Manca1995b]

- Protein priming induced T-cells that recognize peptide

RT(414–428)	Pol(596–610)	WEFVNTPPLVKLWYQ	HIV-1 infection	human(DR supermotif)	[Wilson2001]

- Epitope name: Pol 596. Eleven peptides were identified that had the HLA-DR supermotif, all were found to bind to MHC class II DR molecules and all elicited proliferative responses from multiple HIV-infected donors
- This epitope binds eleven HLA-DR alleles: DRB1*0101, DRB1*1501, DRB1*0401, DRB1*0405, DRB1*1101, DRB1*1302, DRB1*0701, DRB1*0802, DRB1*0901, DRB5*0101 and DRB4*0101, with an IC50 threshold below 1,000 nM
- This epitope sequence is conserved in 84% of clade B isolates
- 6/22 HIV infected individuals responded to this epitope (13/22 responded to some of the DR supermotif epitopes, the 9 non-responder peptides tended to also not have recall responses to rec HIV-1 whole proteins)

RT(429–443)	RT( )	LEKEPIVGAETFYVD	*in vitro* stimulation	human( )	[Manca1995b]

- Protein priming induced T-cells that recognize peptide

RT(528–543)	RT(528–543 BRU)	KEKVYLAWVPAHKGI-G	Vaccine	murine(H-$2^{f,k,d}$)	[Haas1991]

Vaccine: *Vector/type:* peptide *Strain:* BRU

- T-cells from peptide-primed mice could be restimulated by native RT

RT(529–543)	Pol(711–725)	EKVYLAWVPAHKGIG	HIV-1 infection	human(DR supermotif)	[Wilson2001]

- Epitope name: Pol 711. Eleven peptides were identified that had the HLA-DR supermotif, all were found to bind to MHC class II DR molecules and all elicited proliferative responses from multiple HIV-infected donors
- This epitope binds ten HLA-DR alleles: DRB1*0101, DRB1*1501, DRB1*0401, DRB1*0405, DRB1*1101, DRB1*0701, DRB1*0802, DRB1*0901, DRB5*0101 and DRB4*0101, with an IC50 threshold below 1,000 nM
- This epitope sequence is conserved in 94% of clade B isolates
- 6/22 HIV infected individuals responded to this epitope (13/22 responded to some of the DR supermotif epitopes, the 9 non-responder peptides tended to also not have recall responses to rec HIV-1 whole proteins)

RT(530–544)	Pol(712–726)	KVYLAWVPAHKGIGG	HIV-1 infection	human(DR supermotif)	[Wilson2001]

- Epitope name: Pol 712. Eleven peptides were identified that had the HLA-DR supermotif, all were found to bind to MHC class II DR molecules and all elicited proliferative responses from multiple HIV-infected donors
- This epitope binds ten HLA-DR alleles: DRB1*0101, DRB1*1501, DRB1*0401, DRB1*0405, DRB1*1101, DRB1*0701, DRB1*0802, DRB1*0901, DRB5*0101 and DRB4*0101, with an IC50 threshold below 1,000 nM

	• This epitope sequence is conserved in 89% of clade B isolates • 6/22 HIV infected individuals responded to this epitope (13/22 responded to some of the DR supermotif epitopes, the 9 non-responder peptides tended to also not have recall responses to rec HIV-1 whole proteins)				
RT(553–560)	RT(720–730 LAI)	SAGIRKVLFLD	HIV-1 infection	human( )	[Schrier1989]
	• Stimulates T-cell proliferation in HIV-infected donors				